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INDEXED DATABASE ALARM AND MONITOR

This Applin Claims benefit of Prov. No. 60/118,978 filed Feb. 8, 1999.

BACKGROUND OF THE INVENTION

This invention relates to the detection of a fire condition within a residential building, the mapping of a pre-selected group of index, to a related database of pre-recorded voice-playback segments, the transmission, reception and monitoring of index data, and the output of a fixed alarm and an index selected voice-playback message.

DESCRIPTION OF PRIOR ART

The prior art is of two types one is the most common you can get them at any hardware store and they are very cheap one of there drawbacks is the limited range of audible alarm, in a large home, one with a basement, first floor and second floor, the chance of hearing an alarm signal from the basement while sleep in a second floor bedroom is slim, as the smoke reaches the first floor your chances are better, but now the first floor is filled with smoke and a wrong turn because you can't tell where the fire actually is could be the end, If you don't wake until you hear the second floor alarm your may have to clime out of a window. Clearly this is not good enough.

The other major type of alarm system is the whole house monitored alarm, much more cost and you must pay a monthly fee to be monitored but with these systems all sensors are linked so that a fire in the basement would cause all alarms to go off so that now your alerted that one of ten detectors has detected smoke, your first question, Where? Which way do I send the kids? Can I put it out myself? Is their time to save anything?

None of these questions will be answered. Clearly this is not good enough.

STEBBINS – Audio listen and voice security system U.S. Pat. No. 5,736,927

A security alarm system including multiple zone distributed audio monitors and alarm sensors which report and verify detected alarm and communicate with a system controller and central station.

~~BACKGROUND OF THE INVENTION (CONT.)~~

STEBBINS – requires remote monitoring, and detecting sensor information is not provided on site, also system gives no voice output, and would not be very practical to the average residential user.

KIM U.S. Pat No. 5,949,332 Fire alarm radio transmitter and receiver set. This system transmits information to a remote location that must be monitored.

BANGA U.S. Pat. No. 5,889,468 Extra security smoke alarm system. This system does not provide data about which area of coverage or which sensor has detected the fire condition, it requires a central monitoring unit, and only a general alarm is given.

ROUTMAN U.S. Pat No. 5,349.338 Fire detector and alarm system.
Here the recorded vocal warning message or instructions are fixed, the same message will be played back no matter what the location of the fire incidence is.

MUIR U.S. Pat No. 3,810.097 Method and system for visually conveying alarm information.
A remote monitored system, where all information is transmitted off site, information is hardwired and not intended for the occupant.

HSU U.S. Pat No. 5,724,020 Voice warning system for fire accidents.
System will give fleeing instructions to all people in a building through the loudspeakers.
here again instructions are not based on which sensor first detected the alarm.
None of the prior art can be housed within a single unit such as a common smoke detector.
None of the prior art allow a common home owner the ability to change system output or configuration. None of the prior art contains multiple message databases or pre-selected index
None of the prior art provide complete system output at each sensor location, also none of the above system can be picked up at a common hardware store and installed by any end user.
This system will fill the gap, between the common smoke detector and the costly full house monitored system, and save lives by providing all information available to the occupant.

SUMMARY OF THE INVENTION

By assuming the in home installation sites of the most commonly used smoke detectors, a pre-selected group of installation sites are listed as index labels on a multiple position encoder, (1) if a four position encoder is used.

The index labels or positions of the encoder could be designated with the labels, GARAGE, BASEMENT, KITCHEN and 2nd FL HALL (10). At each of these positions the encoder produces a unique four-bit binary output, this output will be used by the system As, the index of the label.

Once the index labels are chosen, a database of related voice-segments can be recorded into a voice-playback device, each segment beginning at an index mapped address.

Combining a fire sensor, an alarm IC with piezo horn and detection I/O, a multiple position encoder, a 8-bit dip switch, a radio frequency decoder transmitter and receiver encoder with antenna switch and antenna, a voice-playback device with speaker and a microcontroller all housed within one unit defines an, " INDEXED DATABASE ALARM AND MONITOR " A full function system requires two or more identical units.

INSTALLATION: on the back (3) of every unit will be an 8-bit dip switch (4) this will be used for the " SYSTEM- ID", set all units to the same code. Install one unit at each location Listed by the Labels on the encoder (10).

OPERATION: in the event of a fire Incidence, detecting unit outputs a fixed alarm followed by the voice segment "INDEXED" by its multiple position encoder.

At the same time, it also transmits a 12-bit radio frequency signal, containing: an 8-bit system ID and the 4-bit index.

This is the only data transmitted or received by this system.

SUMMARY OF THE INVENTION (CONT.)

The event of a fire incidence has occurred, now the other units receive the transmitted signal, (50) they validate the 8-bit system ID and apply the 4-bit index thur a 4-to-8-bit converter (61) to the voice-playback device (58).

The "DETECTING UNITS INDEX HAS BEEN TRANSFERRED" therefore if detecting units index label is basement, the output of the system unit installed in the second floor hall would be, a fixed alarm followed by, the pre-recorded voice segment "ALERT SMOKE HAS BEEN DETECTED IN THE BASEMENT".

To the accomplishment of the above and related objects, the invention may be embodied in the form illustrated in the accompanying drawing, attention being called to the fact, however that changes maybe made in the specific construction illustrated and described within the scope of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 front and back view of present invention and

FIG.2 is a circuit diagram of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

For the purpose of promoting an understanding of the principles of the invention, reference will be made to the embodiment illustrated in the drawings with reference to FIGS. 1and 2.

The present invention operates as an embeded-controled, Interrupt driven, state machine with 3 states.

STATE 1: Initialization.

STATE 2: Monitor.

STATE 3: Interrupt.

~~DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT (CONT.)~~

STATE 1: Initialization a software function programmed into the microcontroller (13) whereby, all interrupt flags input/output registers and constant values are defined.

STATE 2: Monitor, the microcontroller (13) is in "Sleep State" until an interrupt occurs, the fire sensor (22) and the Alarm IC (16) continuously monitor for a fire incidence, and the radio frequency receiver encoder (19) monitors for a matching system ID.

STATE 3: Interrupt; only two interrupts are possible interrupt-1 "LOCAL ALARM" caused by fire sensors (22) detection of a fire incidence which triggers the Alarm IC (16), in detect mode alarm IC concurrently outputs 5 volts (25) to the microcontroller (13) and begins Horn (28) output.

The microcontroller (13) outputs 5 volts (26) to the antenna switch (31) and enables, the multiple position encoder (34) , this causes antenna switch (31) to change from its default assignment, the receiver encoder (19) to the decoder transmitter (40) and puts the multiple position encoders (34) output on the Data Bus (43) the microcontroller (13) then outputs 5 volts (46) reversing the default state of the decoder transmitter (40) off and the receiver encoder (19) on, with the antenna switch (31) set to transmit and the multiple position encoders (34) output, along with the 8-bit dip switch (49) output, applied to the decoder transmitter (40), the microcontroller (13) outputs 5 volts (41) to the transmit enable pin of the decoder transmitter (40) the system ID and INDEX of the label are transmitted (52) to all other system units. the microcontroller (13) now enters a delay loop while the Horn (28) output continues along with the decoder transmitter (40) output.

~~DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT (CONT.)~~

After the delay ends the microcontroller (13) ends output (41) causing end of transmission (52), and then outputs 5 volts (55) which opens Q1 cutting off horns (28) output, and enables voice-chip (58), which begins playback at address given by the multiple position encoder (34) thur the 4 to 8-Bit Converter (61). The microcontroller (13) again enters a delay loop, while voice-chip (58) output continues, after delay ends the microcontroller (13) ends output (55), resets interrupt flag and returns to, "STATE 2" monitor.

Interrupt 2: is a "REMOTE ALARM" caused by receiver encoder (19) receiving (60) a matching system ID and output of 5 volts (17) from receiver encoder's (19) valid transmission pin to the microcontroller (13). The microcontroller (13) disables input (12) then outputs 5 volts (27) thur D1 to the alarm ICs (16) I/O causing alarm IC (16) to enter a detect state and begin horn (28) output, the microcontroller (13) now enters a delay loop, after delay ends, microcontroller ends output (27) alarm IC, (16) no longer in detect state ends Horn (28) output, the microcontroller (13) next outputs 5 volts (55) disconnecting the horn (28) from the alarm IC (16) by opening Q1 and enables the voice-chip (58), starting voice-playback At address supplied by output (70) of receiver encoder (19) thur 4-to-8 bit converter (61) microcontroller (13) again enters a delay loop, after delay ends microcontroller (13) ends output (55), resets interrupt flag and returns to "STATE 2" monitor.